IN THE SPECIFICATION:

Please amend the paragraph beginning on Page 1, line 8 as follows:

The present application is related to U.S. application Serial No. 09/652,820, titled A Method for Recovering 3D Scene Structure and Camera Motion Directly from Image Intensities, filed on 8/31/00, by the same inventor a sthe present application which related application is incorporated herein by reference.

Please delete the translational flow vectors on the top of page 11 as follows:

$$\Phi_x = \left[\dfrac{\left\{Q_z^{-1}\right\}}{\{0\}} \right]$$

$$\Phi_y = \left[\dfrac{\{0\}}{\left\{Q_z^{-1}\right\}} \right]$$

$$\Phi_z = \left[\dfrac{\left\{q_x Q_z^{-1}\right\}}{\left\{q_y Q_z^{-1}\right\}} \right]$$

Please amend the paragraph beginning on Page 21, line 20 as follows:

We eliminate the Z_n^{-1} from (8) above and solve directly for U and Ω. Denote the columns of U by $U \equiv [U_1 \, U_2 \, U_3]$, and similarly for Ω. Let $U_3' \equiv s^{-1} U_3$ and $\Omega_3' \equiv s^{-1} \Omega_3$, where the scale s equals the average distance of the image points from the image center. We include s to reduce the bias of the algorithm. From the definitions of Φ_x, Φ_y, Φ_z, (8) above implies

$$I_{yn}\left[H^{\mathrm{T}}S^{(3)}U_1 + \Psi\Omega_1\right]_n \approx I_{xn}\left[H^{\mathrm{T}}S^{(3)}U_2 + \Psi\Omega_2\right]_n, \approx I_{yn}\left[H^{\mathrm{T}}S^{(3)}U_3' + \Psi\Omega_3'\right]_n$$

$$-s^{-1}\left(\nabla I_n \cdot \mathrm{p}_n\right)\left[H^{T}S^{(3)}U_2 + \Psi\Omega_2\right]_n \approx I_{yn}\left[H^{T}S^{(3)}U_3' + \Psi\Omega_3'\right]_n \text{ and a similar equation}$$

with $(x \leftrightarrow y)$. Step 2A of our algorithm solves this system of linear equations for Ω and U in

the least-squares sense and then recovers the Z_n^{-1} from these solutions and (8) above. The computation is $O(N_p)$. Note also that step 2a bases its computations on ∇I. It we use the value of ∇I computed from the measured reference image I^0, then the estimates of U, Ω, Z_n^{-1} will not be true multi-frame estimates. To get a better multi-frame estimate, one can first re-compute I^0 and ∇I based on all the image data and use the result to compute U, Ω via (9) as follows.

$A2$